

Remarks

Claims 1-13 were pending.

Claims 4, 6, 7 and 10-13 are cancelled.

Claims 1-3 are amended.

Claims 5, 8 and 9 are as previously presented.

The application now contains claims 1-3, 5, 8 and 9.

Claims 1-3 are amended to incorporate into line 3 immediately following the phrase "in portions" the limitation "in the course of from 2 to 3 hours, so that a local overdosing of aluminum chloride is avoided", support is found in original claim 5, and to incorporate into the following line immediately following the term "1,1,3-trimethyl-3-phenylindan" the limitation "having a low oligomer content", support is found in the specification on page 3, lines 2-3.

Claims 1-3 are further amended to delete the terms "a suitable solvent" and " -20°C to 20°C" and insert in their stead the limitations "1,2-dichlorobenzene" and " 0°C to 5°C", support is found in original claim 4.

No new matter is added.

Rejections

Claims 1-3 are rejected under 35 USC 102(b) as being anticipated by Li Bassi, US 4,987,159. The Examples of column 5 and 6 of US 4,987,159 disclose adding AlCl₃ to a mixture of a phenyl indane and isobutyryl chloride (isobutyl acid chloride) in a chlorinated solvent at 0 degrees. There is no teaching of the advantages of slow addition in portions of AlCl₃.

Claims 4-13 are rejected under 35 USC 103(a) as being obvious over the same patent, US 4,987,159. The Examiner notes that the cited art starts with a mixture of indanes and uses methylene chloride as a solvent whereas the instant application starts with a single phenyl indane and uses dichlorobenzene as a solvent.

Applicants respectfully traverse the rejections.

Applicants aim in the present case is to provide the compounds as a crystalline product as the existing methods, for example, the process of the cited US 4,987,159, tend to produce wax like and tacky materials. To achieve this, Applicants have found that the production of oligomers must be avoided. See page 1 of the specification, especially lines 12-14 and lines 20-21.

Applicants have found that to avoid oligomerization a combination of specific steps and specific reaction parameters is necessary. Applicants respectfully maintain that each of the following parameters must be incorporated into step a) of the process to generate the desired results. It is Applicants position that it is the synergy generated by the combination of all the following modifications to the existing art that is responsible for the improvements obtained by the instant process, page 3 line 2 through page 4 line 14 of the specification:

- a) the choice of 1,1,3-trimethyl-3-phenylindane in a good quality having very little oligomeric content;
- b) avoiding to use methylene chloride which is not inert under the given reaction conditions and results in oligomeric side products, (CH_2Cl_2 decays to produce HCl leading to oligomers over a resulting $-\text{CH}_2-$ bridge);
- c) any excess of aluminum chloride must be avoided, therefore:
 - i) slow addition;
 - ii) temp. 0-5°C;
 - iii) adding aluminum chloride directly only to mixtures where the isobutyric acid chloride is present to form an aluminum chloride isobutyric acid chloride complex. This complex is less reactive. Pure AlCl_3 may decay 1,1,3-trimethyl-3-phenylindane.

As the presence of all these features must be present to achieve the most desirable results, Applicants have amended the claims so that each claim contains specific limitations relating to each, for example:

- Feature a) is dealt with by specifying that 1,1,3-trimethyl-3-phenylindan has a low oligomer content,
- Feature b) is dealt with by specifying that 1,2-dichlorobenzene be used as solvent in the first step,
- C Feature c) is dealt with by specifying that addition of aluminum chloride takes place in portions over from 2 to 3 hours at a reaction temperature of from 0°C to 5°C to a solution comprising 1,1,3-trimethyl-3-phenylindan **and** isobutyric acid halide.

Applicants respectfully note that by following the instant process excellent results are achieved, for example:

- I - In Example 1.2 isomerically pure 2-chloro-1-{3-[4-(2-chloro-2-methyl-propionyl)-phenyl]-1,1,3-trimethyl-indan-5-yl}-2-methyl-propan-1-one is obtained by crystallization without needing a chromatographic process.
- II - In Example 1.3 and 1.4 the pure isomers are obtained also without needing a chromatographic process. Applicants maintain that this is possible because oligomers have been avoided as oligomers would inhibit the crystallization leading to a waxy product.
- III - In Example 4.3 the isomeric mixture is obtained in a high yield 66.6% after three reaction steps.

US 4,987,159 is silent about the use of 1,2-dichlorobenzene as a solvent in step a).

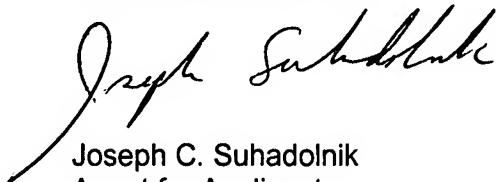
Applicants therefore respectfully submit that anticipation can not exist and kindly ask that in light of the above amendments the rejections of claims 1-3 under 35 USC 102(b) over Li Bassi, US 4,987,159 be withdrawn.

US 4,987,159 has no teaching regarding the negative impact that methylene chloride may have on the reaction and exemplifies only methylene chloride as a solvent in the Friedel-Crafts reaction. The instant claims also have identified particular and specific ranges of temperature, addition times for AlCl₃, and the specific solvent 1,2-dichlorobenzene that combined lead to the process improvements identified.

In light of the above amendments and discussion, Applicants respectfully submit that the rejections of the instant claims under 35 USC 103(a) over US 4,987,159 are addressed and overcome and kindly ask that the rejections be withdrawn.

Applicants believe that all the present rejections have been adequately traversed herein and kindly ask that all rejections be withdrawn and that instantly amended claims 1-3, 5, 8 and 9 be found allowable. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,



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